Washington State Department of Transportation

December 2006

Reducing Diesel Emissions in Washington State: Public Fleet Diesel Emissions Reduction

Public fleet vehicles frequently travel in and near population centers on local roadways. They stop and idle near homes, and they park and load near building air intake systems. With updated engines and fuels, today's diesel engines emit less than older engines – but more can be done to make them even cleaner.

Agencies Can Reduce Pollution from Public Vehicles in a Variety of Ways.

Here are a few options that can range in cost from zero to $15,000 per vehicle:

- *Lower cost:* ignition idle shut-offs, some alternative fuels (e.g., biodiesel), catalytic mufflers, crankcase ventilation filters, and increased maintenance.
- *Medium cost:* low energy flashing lights, environment friendly "green fluids".
- *Higher cost:* exhaust particulate filters and some alternative fuels like conversion to natural gas or hybrid electric.

Installation of some of this equipment reduces exhaust while the engine is running. Others, like low energy lights, reduce pollution by eliminating periods of idling.

Generally, retrofitting and reducing idling for the older vehicles enables the largest reductions in emissions. When many public fleet vehicles are sold, they end up in private hands – so the emission cutting investments continue helping people breathe better even when they are no longer publicly owned.

A Public Fleet Includes:

Any publicly owned, leased or rented vehicles to be used for public service. These include state and city maintenance vehicles, postal trucks, public garbage haulers, public utility districts, school buses, transit, and more.

Exhaust Catalysts and Crankcase Filter

Programs That Can Help Pay for Diesel Pollution Reduction May Include:

Develop diesel targeted "**State Infrastructure Bank (SIB)**" with revolving loan fund for low or no interest loans.

Local Toxics Control Account (based on fuel fees and spent under direction by the Dept of Ecology)

Federal Congestion Mitigation & Air Quality (CMAQ) funding – competitive and geographically limited to use in Vancouver, Spokane, Pierce / King / Snohomish Counties, Yakima, and Thurston County. Recently, diesel reductions were identified as a priority use of funds in the federal funding authorization.

West Coast Diesel Collaborative through the US Environmental Protection Agency – this fund is looking for innovative projects. It has high competition from CA, OR, private and other public sector proposals.

State Vehicle Title Fee funding (School Bus retrofits and primary Public Fleets) – through Ecology and local clean air agencies. Currently, the final year of funding from this source is 2008.

Clean Fuels Grant Program – a Federal Transit Agency discretionary program targeted to support clean transit bus equipment and facilities.

US EPA Clean Diesel Grant Program – targeted to construction equipment.

WSDOT and other public agencies will continue to identify other funding sources as they come available.

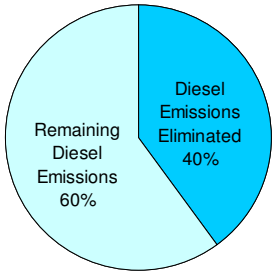
REDUCE – REFUEL – REPAIR – RETROFIT – REPOWER – REPLACE

WSDOT maintenance vehicles and equipment improve air emission performance in six different ways with upgraded equipment, new fuels, and thoughtful operation.

1. Reduce - Idle Reduction

In September 2006, WSDOT developed its first no idle policy. To make this possible, incandescent yellow-flashing lights are being replaced with low energy lights. This allows engines to be turned off while remaining visible beside the roadways. In 2007, these light replacements will be possible in Central Puget Sound using federal transportation and air quality funds. WSDOT will continue to look for grants for the rest of the state. It is estimated that these light replacements can reduce air pollution and reduce greenhouse gases from each engine by about 40 percent, and save fuel in the process.

Potential Reduction in Diesel Emissions with Low Energy Lights
Emissions per Engine



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2. Refuel - Biodiesel and Ultra Low Sulfur Diesel

Since 2005, WSDOT fueling stations in Central Puget Sound have provided five percent biodiesel, which reduces fine particulate matter emissions by two percent. WSDOT plans to increase beyond the current 16 stations to cover statewide when fuel is available, starting with the I-5 corridor. By 2009, WSDOT will stock 20 percent biodiesel in all feasible maintenance fueling stations throughout the state. B20 will reduce fine particle pollution from each engine by about ten percent compared to 100 percent petroleum fuel. Ultra low-sulfur diesel is currently provided at all WSDOT fueling stations, as required on October 15, 2006.

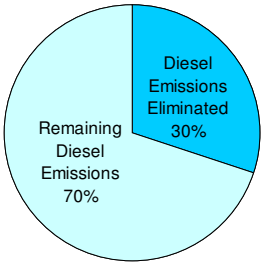
3. Repair - Maintenance

WSDOT maintains its fleet equipment to the highest standards. Well-timed oil changes and vehicle checks not only reduce wear and tear and increase lifespan, but fixing oil leaks, preventing brake drag, and maintaining tire pressure prevents air pollution from increasing as the vehicles get older.

4. Retrofit - Catalysts and Filters

In Yakima, 29 WSDOT dump trucks, sweepers, and other equipment were retrofitted with tailpipe diesel catalysts and engine filters in 2005/2006 using special US EPA and Ecology grants. WSDOT will also retrofit around 150 more vehicles in Pierce, King and Snohomish counties using federal transportation and air quality dollars in 2007. Ecology will also assist with more retrofits in the Spokane area in 2007. Overall, these retrofits will reduce diesel pollution by 20 to 40 percent from each engine.

Potential Reduction in Diesel Emissions with Engine Retrofits
Emissions per Engine



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5. Repower

WSDOT occasionally rebuilds or replaces specialized equipment engines with cleaner models.

6. Replace

To assure reliable performance, WSDOT replaces most equipment every 12 to 15 years. This turn-over also allows WSDOT to update to the cleanest air emission control equipment with each new purchase and take advantage of new air quality rules. When new onroad engines manufactured after 2007 are purchased, they will pollute 90 to 99 percent less particulate matter, and those purchased after 2010 will pollute 90 to 99 percent less NOx, than engines manufactured in the 1980s.

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